

## Surge protection device - TT-2-PE/S1-M-24DC - 2920638

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Double-level modular terminal block with two-stage surge protection for one two-wire impedance-sensitive signal circuit, disconnect knife on both signal paths, separate ground connection, nominal voltage: 24 V DC.

### Your advantages

- ✓ Versions with and without disconnect knife
- ✓ Protection of a floating double wire in which the introduction of additional resistors for decoupling the protection stages leads to problems
- ✓ Multi-stage modular terminal blocks with screw connection technology
- ✓ Disconnection of signal circuits by disconnect knife



### Key Commercial Data

|              |               |
|--------------|---------------|
| Packing unit | 14 pc         |
| GTIN         |               |
| GTIN         | 4046356160186 |

### Technical data

#### Dimensions

|        |         |
|--------|---------|
| Height | 94.8 mm |
| Width  | 6.2 mm  |
| Depth  | 69.1 mm |

#### Ambient conditions

|                                 |                                        |
|---------------------------------|----------------------------------------|
| Ambient temperature (operation) | -40 °C ... 80 °C                       |
| Altitude                        | ≤ 2000 m (amsl (above mean sea level)) |
| Degree of protection            | IP20 (with end cover)                  |

#### General

|                                        |        |
|----------------------------------------|--------|
| Housing material                       | PA 6.6 |
| Flammability rating according to UL 94 | V-0    |

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## Technical data

### General

|                     |                                                                   |
|---------------------|-------------------------------------------------------------------|
| Color               | jet black RAL 9005                                                |
| Mounting type       | DIN rail: 35 mm                                                   |
| Type                | Double-level terminal block with PE foot – separate PE connection |
| Number of positions | 2                                                                 |
| Direction of action | Line-Line & Line-Earth Ground                                     |

### Protective circuit

|                                                                 |                                             |
|-----------------------------------------------------------------|---------------------------------------------|
| IEC test classification                                         | C1                                          |
|                                                                 | C2                                          |
|                                                                 | C3                                          |
|                                                                 | D1                                          |
| Nominal voltage $U_N$                                           | 24 V DC                                     |
| Maximum continuous voltage $U_C$                                | 30 V DC                                     |
|                                                                 | 21 V AC                                     |
| Rated current                                                   | 10 A (40 °C)                                |
| Operating effective current $I_C$ at $U_C$                      | $\leq 5 \mu A$                              |
| Residual current $I_{PE}$                                       | $\leq 2 \mu A$                              |
| Nominal discharge current $I_n$ (8/20) $\mu s$ (line-line)      | 300 A                                       |
| Nominal discharge current $I_n$ (8/20) $\mu s$ (line-earth)     | 5 kA                                        |
| Pulse discharge current $I_{imp}$ (10/350) $\mu s$ (line-earth) | 500 A                                       |
| Total discharge current $I_{total}$ (8/20) $\mu s$              | 10 kA                                       |
| Nominal pulse current $I_{an}$ (10/1000) $\mu s$ (line-line)    | 60 A                                        |
| Nominal pulse current $I_{an}$ (10/1000) $\mu s$ (line-earth)   | 100 A                                       |
| Output voltage limitation at 1 kV/ $\mu s$ (line-line) spike    | $\leq 45 V$                                 |
| Output voltage limitation at 1 kV/ $\mu s$ (line-earth) spike   | $\leq 650 V$                                |
| Output voltage limitation at 1 kV/ $\mu s$ (line-line) static   | $\leq 45 V$                                 |
| Output voltage limitation at 1 kV/ $\mu s$ (line-earth) static  | $\leq 650 V$                                |
| Residual voltage at $I_n$ (line-line)                           | $\leq 55 V$                                 |
| Residual voltage with $I_{an}$ (10/1000) $\mu s$ (line-line)    | $\leq 50 V$                                 |
| Voltage protection level $U_p$ (line-line)                      | $\leq 50 V$ (C1 - 500 V / 250 A)            |
| Response time $t_A$ (line-line)                                 | $\leq 1 ns$                                 |
| Response time $t_A$ (line-earth)                                | $\leq 100 ns$                               |
| Input attenuation aE, sym.                                      | typ. 0.1 dB ( $\leq 1 MHz / 50 \Omega$ )    |
|                                                                 | typ. 0.1 dB ( $\leq 400 kHz / 150 \Omega$ ) |
| Cut-off frequency $f_g$ (3 dB), sym. in 50 Ohm system           | typ. 7 MHz                                  |
| Cut-off frequency $f_g$ (3 dB), sym. in 150 Ohm system          | typ. 2 MHz                                  |
| Capacity (line-line)                                            | $< 2.5 nF$                                  |
| Resistance per path                                             | $< 5 m\Omega$                               |
| Surge protection fault message                                  | none                                        |
| Max. required back-up fuse                                      | 10 A (gL/gG/C)                              |
| Impulse durability (line-line)                                  | C1 - 500 V / 250 A                          |

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### Technical data

#### Protective circuit

|                                 |                   |
|---------------------------------|-------------------|
|                                 | C3 - 25 A         |
| Impulse durability (line-earth) | C2 - 10 kV / 5 kA |
|                                 | D1 - 500 A        |

#### Connection data

|                                  |                                             |
|----------------------------------|---------------------------------------------|
| Connection method                | Screw connection                            |
| Connection method IN             | Screw terminal blocks                       |
| Connection method OUT            | Screw terminal blocks                       |
| Screw thread                     | M3                                          |
| Tightening torque                | 0.6 Nm                                      |
| Stripping length                 | 8 mm                                        |
| Conductor cross section flexible | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section solid    | 0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup>   |
| Conductor cross section AWG      | 24 ... 14                                   |

#### Standards and Regulations

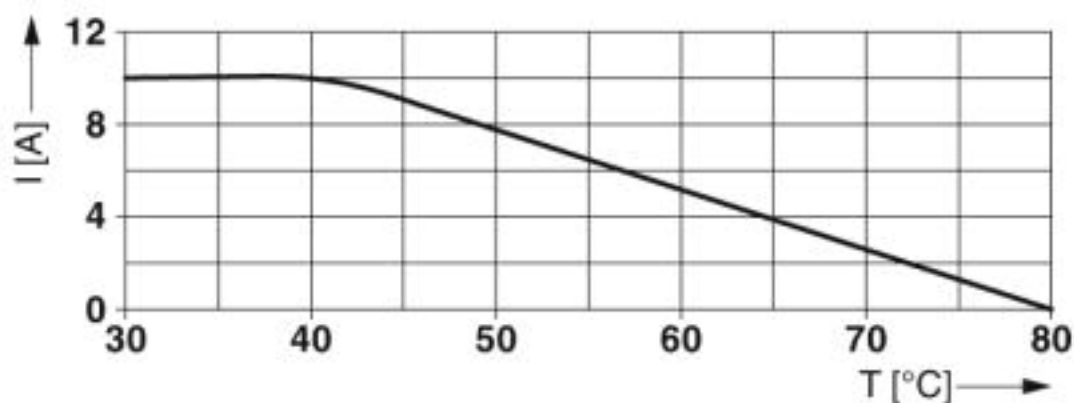
|                          |                   |
|--------------------------|-------------------|
| Standards/specifications | EN 61643-21 2001  |
|                          | IEC 61643-21 2000 |

#### Environmental Product Compliance

|            |                                                                                                     |
|------------|-----------------------------------------------------------------------------------------------------|
|            | Lead 7439-92-1                                                                                      |
| China RoHS | Environmentally Friendly Use Period = 50                                                            |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

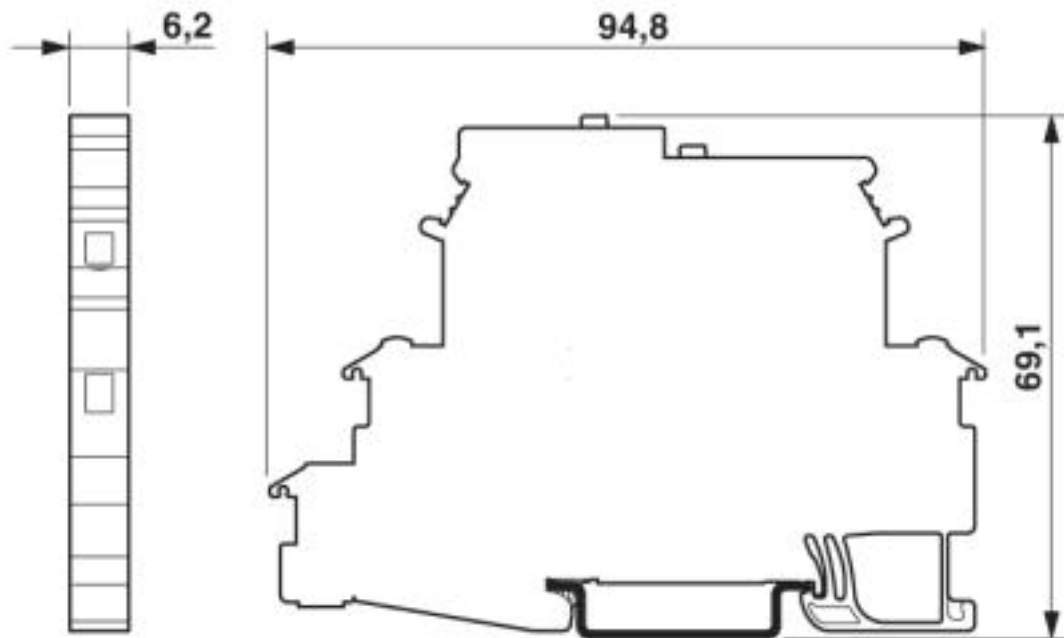
### Drawings

Diagram

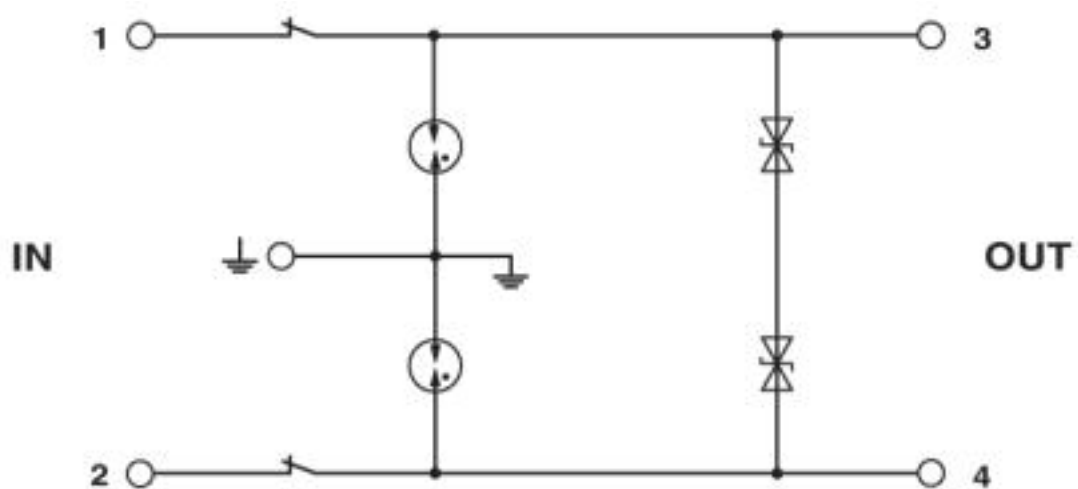


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Dimensional drawing



Circuit diagram



Approvals

Approvals

Approvals

DNV GL / UL Listed / EAC / EAC

Ex Approvals

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### Approvals

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#### Approval details

|           |                                                                                    |                                                                                                                                                       |                         |
|-----------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| DNV GL    |   | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a>                                                                     | TAE00001N7              |
| UL Listed |   | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 138168           |
| EAC       |   |                                                                                                                                                       | EAC-Zulassung           |
| EAC       |  |                                                                                                                                                       | RU C-<br>DE.A*30.B01561 |

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